

REVIEW:

CARVER TX-11 FM TUNER

When I first started to hear about this amazing tuner, I must admit to being quite a bit skeptical about some of the incredible things the advertising promised. However, after I first tuned a demo model, I was very impressed. So impressed, in fact, that I decided to try one out on a one-week approval period. It only took three days to convince me that this is indeed, one of the most remarkable FM tuners on the market.

What impressed me first was the adjacent channel performance. This tuner has an almost unbelievable 38 dB of adjacent channel rejection, and that is the highest adjacent channel figure yet measured by several professional reviewers, including such notables as Stereo Review's Julian Hirsch. Overall, the selectivity "skirts" of the TX-11 are excellent. It should be noted that the alternate channel rejection is 90 db—while that may not be the highest available, the very steep adjacent channel performance makes for a very hot FM DX machine, when used in conjunction with a directive antenna.

This seems to be the kind of tuner many FM DXers were eagerly waiting for. This is a digitally synthesized unit, and tunes in 100 kHz increments. Up until recently, such digital tuners and receivers have had a bad name in FM DX circles. More serious FM DX enthusiasts were quick to point out the fact that while the digital electronics may look "pretty," the really important DXing specs left a lot to be desired. It seemed as if you were paying for the digital display more than anything else.

In addition to inadequate selectivity, the most deficient areas of performance in many of the digital models has been in the IF and spurious rejection figures. The TX-11 offers excellent showings in these specs; their claims of 110 dB of IF and spurious rejection is backed up by the professional reviews. It can be argued, though, that a DXer needs every bit of this and then some, with even 120 dB of spurious and IF rejection probably not quite enough to cope with the local overload situation in an area with very strong signals.

Despite this fact, no synthesized tuner or receiver that I've tried (and I've tried quite a few of them) on FM with an antenna literally staring over the treetops at my very local 104.1's tower will do as well. In fact, I was not willing to use any kind of synthesized receiver for regular FM DX tuning before I first tried out a TX-11.

All the claims about this tuner being a true breakthrough in technology appear to be true. Unlike many other units, this one seems to have been designed to tune weak signals, and features special circuits that can process a weak signal to make it sound as good as a local.

The primary design objective of the Carver TX-11 almost sounds impossible: an FM stereo tuner that can tune stereo signals with about the same noise level as it can in mono. The result is astounding, because I cannot remember a tuner that has proved to live up to most all of the claims made for it before it even went into regular production.

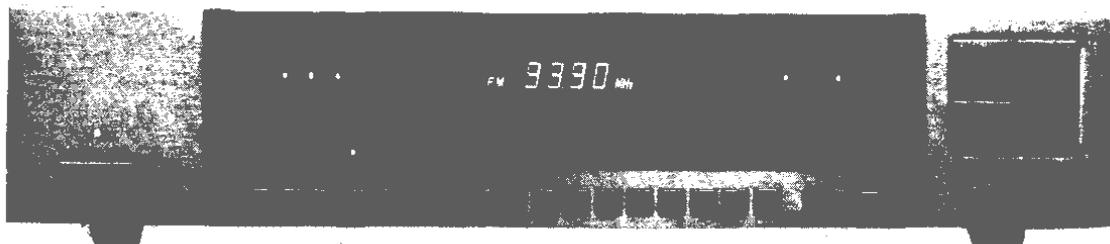
MANUFACTURER'S CLAIMED SPECS:

SPECIFICATIONS

Tuning range	87.5 - 108 MHz		
Antenna terminals	75-ohm unbalanced coaxial input/300-ohm balanced input		
Intermediate frequency	10.7 ^{MHz}		
Frequency response	20 Hz to 15 kHz, +1 dB		
Selectivity (at 400 kHz)	90 dB (narrow); 35 dB (wide)		
Capture ratio	1.0 dB		
AM supression ratio	50 dB; 65 dB with CCD		
Image response ratio	110 dB		
IF response ratio	110 dB		
Spurious response ratio	110 dB		
Output level(75 kHz deviation)	700 <i>oW</i> , 600 0		
System	PPL crystal-locked digital synthesizer		
Power requirements	120 Vac, 60 Hz		
Power consumption	15 W		
Dimensions (<i>wfhfd</i>)	17.5/3.5/12.5" (without rackmount hardware)		
Weight	11.25 lb		
Supplied accessories	FM ribbon antenna, RCA-style patch cords STEREO WITHWT STEREO WITH CHARGE-COUPLED DETECTOR		
Usable sensitivity			
75 ohms	11.3 dBf/1.0 uV	34 <i>dBf</i> /14 uv	16.3 dBf/1.78 uV
300 ohms	11.3 dBf/2.0 uv	34 dBf/28 uv	16.3 dBf/3.57 uv
50 dB quieting sensitivity			
75 ohms	16.1dBf/1.7 uV	37 dBf/19 uV	21dBf/3.1 uV
300 ohms	16.1dBff3.4 uV	37 dBf/39 uV	21dBf/6.2 uV
Signal/noise ratio			1 2
75 ohms	82 dB @ 85 dBf	74 dB ₁ @ 85 dBf	85 dB ₂ @ 85 dBf
300 ohms	82 dB @ 85 dBf	74 dB @ 85 dBf	85 dB 59 85 dBf
Stereo separation (wide)	1 kHz: 45 dB	45dB59-10	dB
	100 Hz: 36 dB	30dB59-15	dB
	10 kHz: 36 dB	15dB59-23	dB

- 1 - Includes full carrier jitter of test instrumentation.
- 2 - Without carrier jitter.

Design and specifications subject to change without notice.



Of particular interest to the FM DXer is the new approach to FM detector design that Carver employs. The circuit, which they call a "Delta-Q detector, reduces noise by about 3 dB to begin with, before any additional signal processing takes place. This is probably the first real breakthrough in FM detector design in many years—perhaps even the only truly useful advance from the DXer's standpoint since the FET started to be widely used.

The Delta-Q detector actually varies the tuner's bandwidth to suit the signal strength. This is the kind of circuit action that many DXers have wanted for years. With bandwidth automatically responding to signal conditions, the effective signal-to-noise ratio will be about as high as can be achieved by a modern tuner design. In fact, almost all stereo signals that can be received by this tuner can be made to sound as clean as if they were in mono. It is actually possible to listen to weak meteor scatter in stereo, if you so desire.

Purists will object to certain automatic and "idiot-proof" features in the TX-11. First of all, there are a minimum of user controls—including no STEREO/MONO switch. Although this may sound shocking, the switch is not needed. The tuner will respond to a mono signal as a mono FM tuner would; whenever it encounters a stereo signal, it can be made to produce results that would be able to the equivalent of the best tuner switched into mono. The lack of a STEREO/MONO switch proves to be no problem, as long as you have the capability to switch to mono on your audio amplifier, when needed.

It is quite difficult to get used to an FM tuner that will perform as well in stereo as most other tuners do in mono. It takes some getting used to, but in the process, you may find that the special noise reduction and multipath circuits of the tuner (both of which are user selectable) come to be very useful for DXing. With the noise reduction circuit, you'll be able to listen to many more stations in stereo than you ever thought to be possible under normal conditions. I now have an FM translator on 105.5 at approximately 50 miles that can be made to sound like a local under the deadest of conditions—in stereo, and using a TV antenna with rather ordinary performance on the FM frequencies. Friends and fellow electronics buffs who have seen this demonstrated are skeptical when I tell them, usually telling me that it would take a tropo opening to give me the type of signal needed for fully-quieted FM stereo from such a flea-power transmitter; they can hardly believe their ears when they find how "normal" this is for this tuner.

But the overwhelmingly astounding feature remains the adjacent channel performance of the TX-11. VUD editor Dave Nieman who also acquired one shortly after seeing how it worked, just keeps logging new stations on a weekly basis, often under normal or normal-to-slightly enhanced tropo conditions, many of them on channels adjacent to locals or strong semi-locals that were tough to DX on before. The selectivity curve of the TX-11 can effectively open up many new (i.e., previously un-DXable) channels for FM DX! In fact, after six months of tuning this unit, often fed by a variety of unspectacular antennas, ranging from a piece of zip cord to a channel 2 to 13 log-yagi (in other words, everything but a really decent FM DX antenna such as the CM Stereo Probe 9), I am still often astounded by what it can do with a weak signal.

Rather than go on and on about the TX-11, I would rather suggest that you try to see one demonstrated, or better yet, if you are truly interested, try to find an audio shop that will let you try one on approval. One thing is certain about digitally synthesized units—they are not for everyone. In fact, it might be unwise for the avid FM DX enthusiast to use this as his or her primary tuner. It suffers from the same basic DXing bugaboo that all true digitally-synthesized tuners share: it tunes in increments. In this case, it's 100 kHz steps. You could conceivably miss out on a rare off-frequency station with such a tuning system.

In spite of this, most any FM DXer would benefit from the TX-11's performance — this is the first tuner to employ the charge-coupled device (CCD) in special signal processing circuitry, and may well be the first of many great tuners to come. It is certainly the first digitally synthesized rig that many FM DX enthusiasts will find to be a true DX machine!

—BILL THOMPSON